

The Connection Project: Challenges for the ACE community

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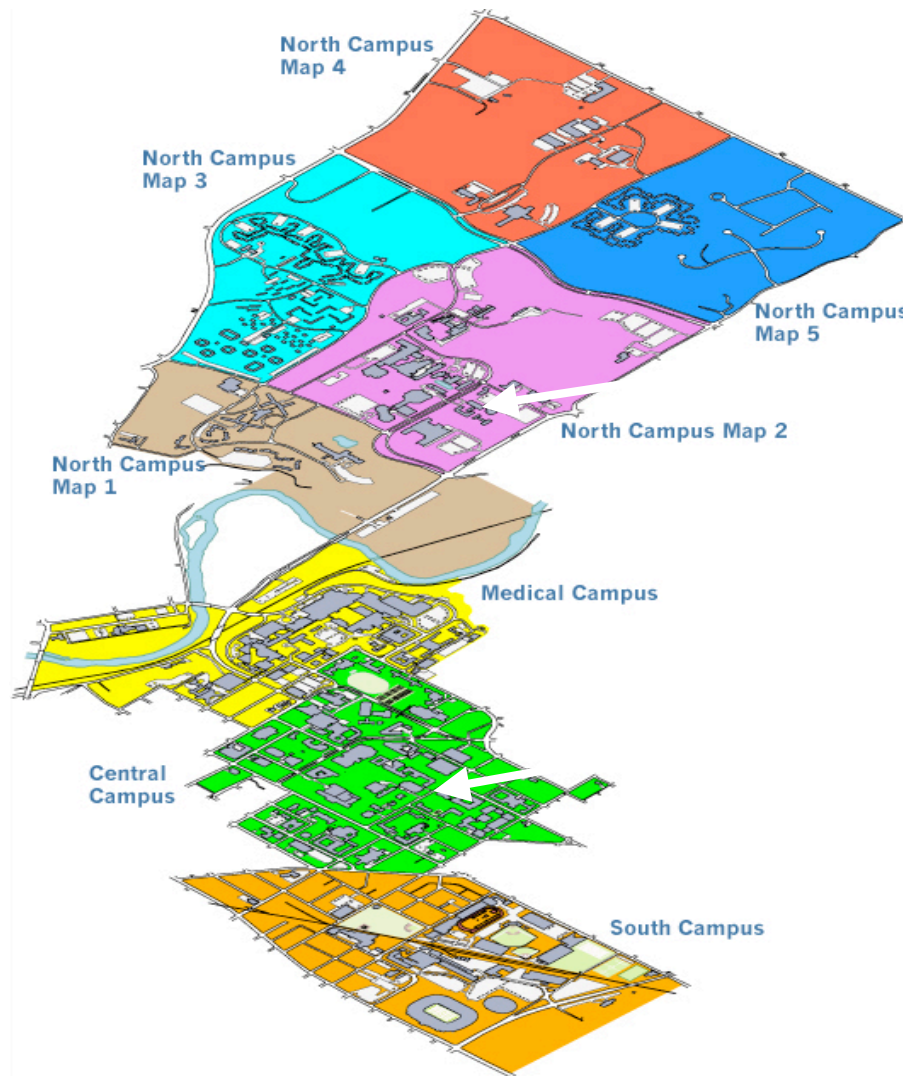
Today's talk

- Provide a brief overview of the goals and activities of the Connection Project
- Discuss some of the challenges for the ACE community

A continuing thread

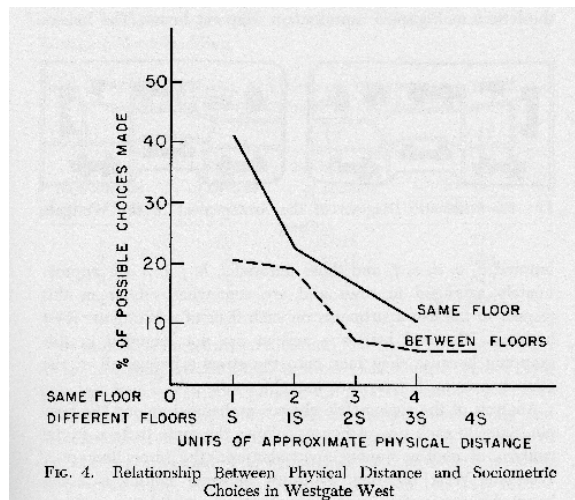
- Last year's WACE talk looked at social ergonomic problems in advanced collaborative environments
 - Design characteristics of a system can directly influence social behavior mediated by the system (e.g. Brown and Newman, 1985)
- In the past year we began a project at the University of Michigan to look at some of these issues in more depth, using a combination of laboratory and field studies
 - Linking two buildings at the UM School of Information





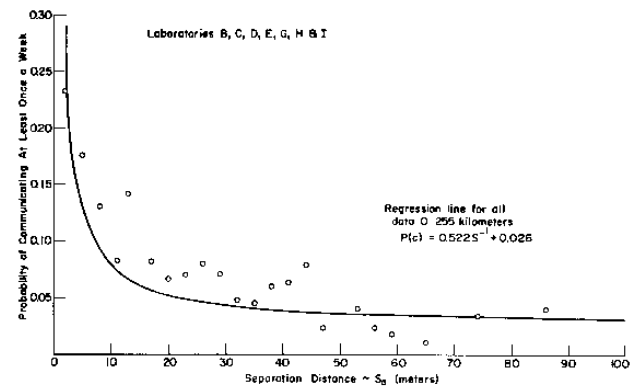
SI North I, II

West Hall

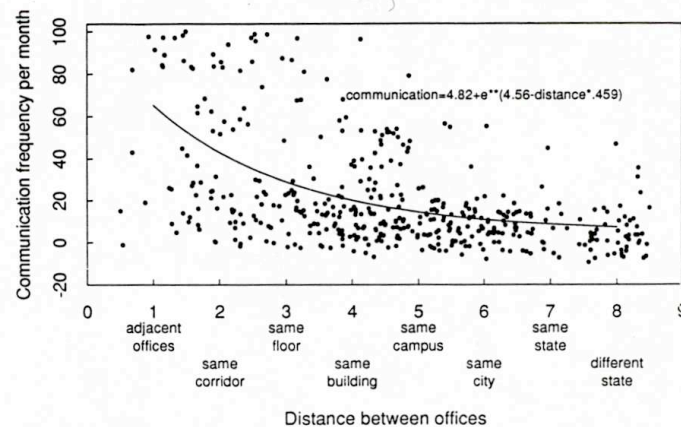


Source: Festinger, L., Schachter, S. and Back, K.W.. (1950). *Social pressures in informal groups: a study of human factors in housing*. Stanford University Press.

Figure 8.3 The Probability That Two People Will Communicate as a Function of the Distance Separating Them (0-100 meters)



Source: Allen, T.J. (1977). *Managing the flow of technology in organizations*. MIT Press.



Source: Galegher, Kraut, & Egido (1990). *Intellectual teamwork: Social and technological foundations of cooperative work*, p. 160. Hillsdale, NJ: Lawrence Erlbaum Associates.

Solutions

- Transportation
 - University, public and personal
- Collocation of groups
- Hotel space
- Commodity video conferencing facilities





West Hall



SI North



West Hall



SI North

Some R&D areas

- Usability and deployment focus areas
 - Documentation
 - User controls
- Understanding technology/design goals

Documentation and training

- Documentation process centered around user testing
 - Many iterations with technical and non-technical users
- Produced full-color print documentation
- Produced a training video
- Conducted training sessions with key faculty and staff members

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CONNECTION
project

...a digital video connection for long distance collaboration ...

Steps to connect between sites:
(use the same instructions at both sites)

| | | |
|---|--|---|
| 1. Power on the screen (plasma display / remote) | | 'Power on' button |
| 2. Power on the Polycom unit. | | Pick up the remote |
| 3. <u>Unmute</u> the microphone (button on the microphone) | | Red light – mute No light – live |
| 4. Select / type the site address | | Use navigation keys in the Polycom remote and 'Enter' Button <small>Conference Room IP Address: West Hall 141.211.202.241 SI North: 141.211.194.112</small> |
| 5. To place call: press 'Call/Hangup' button (Polycom remote) | | Press the 'Call/Hang up' button to place the call |
| 6. Conduct the meeting | | Use the 'Far' button and the arrow keys to adjust the display on the remote site. Use the 'Near' button and the arrow keys to adjust the display at your site. Adjust display, if necessary |
| 7. To end call: press 'Call/Hangup' button (Polycom remote) | | Press the 'Call/Hang up' button twice to end the call |
| Disconnect: | Receive call: | |
| 1. Use the remote control to set the plasma screen to 'Stand by' 2. Mute the microphone by pressing the button on top of the microphone pod so that the red light turns on | 1. Use the remote control to 'Power on' the plasma display screen 2. <u>Unmute</u> the microphone (use the same instructions at both sites) | |

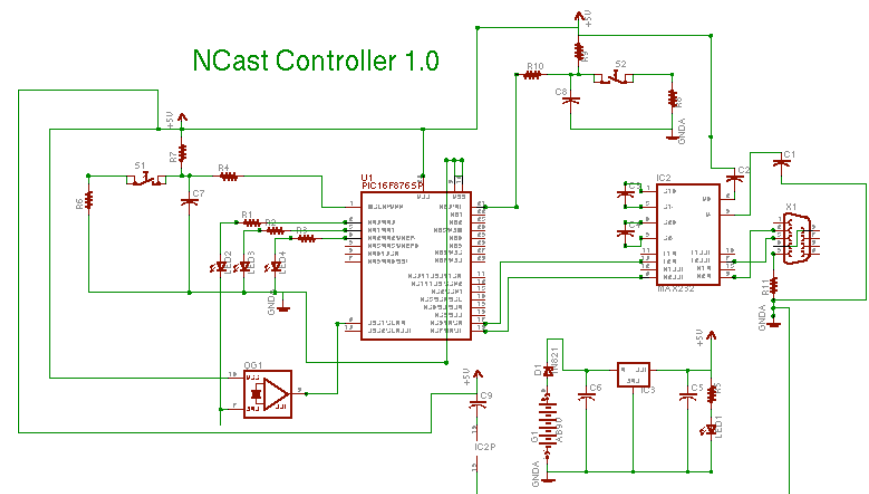
Questions?
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Feedback/Comments
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Connection Project is funded by the Office of the Provost, University of Michigan.

Control systems

- Web interfaces, multiple remote controls and complicated workflows do not work for users.
- Integrated control systems can quickly get too complex for users
- Developed a set of custom IR and RS-232 controllers to execute common workflows



Usability activity

- Focus on the additional work that's needed to be done in order to move from a successful demo to a successful deployment
- We know this is a problem, need an organized approach to codifying and sharing this knowledge
- This is, largely, an art right now

Design goals: Quality

- There are two schools of thought on video quality
 - 384 Kbps H.264 is all you'll ever need
 - Good video requires at least 30 Mbps, 1.5 Gbps for an uncompressed HD stream is ideal
- Conducted a lab study to examine the impact of various codecs on subjective perceptions of video quality

Video quality - is 384k enough?



Clips from Video Quality Experts Group, www.vqeg.org

Video quality - is 384k enough?



Clips from Video Quality Experts Group, www.vqeg.org

Need for targets

- The quality study illustrates another problem in designing advanced collaborative environments
 - The design goals/targets are poorly understood
- Collaborative environments do not have the same measurable performance figures as HPC, networking or big data
- Grand challenges?

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